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by Louis Morel

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Abstract

Exports in advanced economies have been relatively sluggish since 2011, growing at a much slower pace than observed before the global financial crisis. In this paper, export-demand equations for a panel of 18 countries in the Organisation for Economic Co-operation and Development (OECD) are estimated in order to assess whether this sluggishness can be attributed to weak foreign demand. Over half of the slowdown in advanced-economy export growth since 2011 (relative to the pre-crisis trend) can be explained by weak global demand growth. More specifically, exports in advanced economies have been restrained by the weakness of global investment, a trade-intensive demand component and weak demand out of Europe, a region that accounts for about 40 per cent of the demand for advanced-economy exports. Weak foreign demand cannot explain all of the weakness in aggregate OECD exports since 2011, suggesting that other factors have also played a role.

JEL classification: F1, F4
Bank classification: International topics; Recent economic and financial developments

Résumé

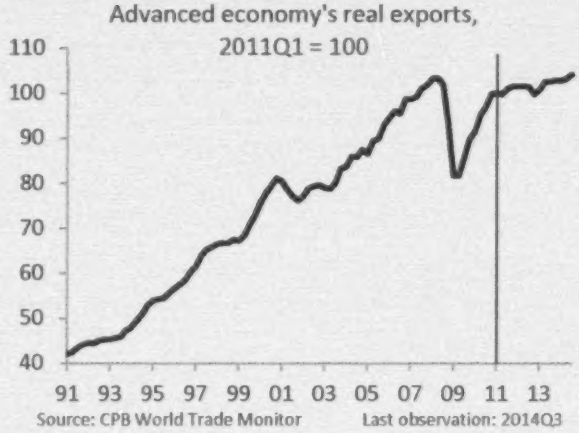
Depuis 2011, la croissance des exportations des économies avancées a été relativement faible, nettement inférieure à celle observée avant la crise financière mondiale. Dans cette étude, l'auteur estime des équations de demande d'exportations pour un groupe de 18 pays membres de l'Organisation de coopération et de développement économiques (OCDE) en vue de déterminer si cette faiblesse est imputable à l'atonie de la demande étrangère. Plus de la moitié du ralentissement de la croissance des exportations des économies avancées enregistré depuis 2011 (relativement à leur progression tendancielle d'avant la crise) peut s'expliquer par la croissance timide de la demande mondiale. Plus particulièrement, les exportations des économies avancées ont été freinées par la faiblesse de l'investissement mondial, composante de la demande fortement dépendante des échanges, et par une demande anémique en Europe, région qui compte pour environ 40 % de la demande d'exportations des économies avancées. La demande étrangère atone n'explique toutefois pas à elle seule la faiblesse des exportations globales des membres de l'OCDE constatée depuis 2011 : d'autres facteurs auraient joué un rôle.

Classification JEL : F1, F4
Classification de la Banque : Questions internationales; Évolution économique et financière récente

1. Introduction

Real exports in advanced economies (AEs) have been sluggish since 2011, growing at an annual rate of 1.2 per cent, which is in sharp contrast to the 5.6 per cent annual average over the pre-crisis period (1991–2007) (**Chart 1**). While there may be several explanations for the slowdown in trade, including increased protectionism, production off-shoring and a shift toward a less trade-intensive auto industry, a primary driver is often assumed to be weak global demand.

Chart 1: Exports in advanced economies have been sluggish since 2011



Despite a large body of literature discussing the causes of the Great Trade Collapse (GTC) of 2008–09—see, in particular, Baldwin (2009) and Bems, Johnson and Yi (2012)—little has been written on the factors behind the slowdown in global trade since 2011, in particular, from a demand perspective. The debate on the post-crisis slowdown in global trade has been mostly articulated in terms of cyclical versus structural factors. For instance, Constantinescu, Mattoo and Ruta (2014) argue that the bulk of the trade slowdown is structural, since the long-term income elasticity of trade had been falling since the 2000s (prior to the GTC). Similarly, Krugman (2013) argues that the structural factors that had supported the expansion in global trade in the 1990s (such as trade liberalization and containerization) cannot continue forever, suggesting that the limits to increasing trade elasticities may have been reached. Others, such as Boz, Bussière and Marsilli (2014), extend the work of Bussière et al. (2013) and conclude that cyclical factors are the main explanation, i.e., weakness in trade-intensive domestic demand components.

In this paper, we do not take a stance on whether the post-crisis slowdown in trade is structural or cyclical. We instead assess how much of this slowdown can be attributed to weak global demand, in particular, to a shift in the composition of global demand away from more trade-intensive components. To do so, we proceed in two steps. First, starting from a variant of the import-intensity adjusted demand measures developed by Bussière et al. (2013), we elaborate new country-specific measures of foreign demand. These foreign-demand measures are a weighted average of the domestic demand for real imports of a country's trading partners. Second, using these foreign demand measures along with relative export prices, we estimate export demand equations for a panel of 18 countries in the Organisation for Economic Co-operation and Development (OECD). Based on this regression analysis, we conclude the following:

- Over half of the slowdown in export growth observed among advanced economies during the 2011–14 period (relative to pre-crisis trends) can be explained by sluggish global demand. While the impact of slower global demand on AE export growth stems mainly from a broad-based weakening in foreign demand, in particular, in Europe, the shift in the composition of global

demand away from investment spending (a trade-intensive demand component) has also contributed to the slowdown.

- The aggregate results for advanced economies mask important differences between European and non-European countries:
    - Foreign demand for European exports has slowed considerably since 2011, driven by weak investment (most notably among other European countries).[1] While the slowdown in demand explains the exports of core Europe relatively well, in the peripheral countries (especially Spain and Portugal), the slowdown in export growth has been smaller than suggested by foreign demand. This is most likely due to the competitiveness gains achieved in the periphery via post-crisis structural adjustments and disinflation.
    - For non-European countries, the slowdown in export growth since 2011 is inconsistent with changes in foreign demand and relative prices. This is mostly due to intensive trade with China by countries such as Japan and Korea, whose exports have not kept pace with China's rapid economic growth. Production offshoring and declining competitiveness, as well as China moving up the value-added chain could be explanatory factors.
- For a majority of AE countries, exports over the past three years have increased less than suggested by fundamentals (demand and relative prices), pointing to other restraining factors beyond lacklustre demand.

The rest of the paper is organized as follows. Section 2 provides details on the construction of the measures of foreign demand for exports. Section 3 presents the panel regression specification and discusses the results. Section 4 concludes.

2. Constructing Measures of Foreign Demand for Exports

In this paper, we seek to examine the link between global demand and AE exports. Previous papers that have analyzed the importance for global trade of changes in the composition of demand focus on AE imports rather than AE exports. For example, Bussière et al. (2013) and subsequently Boz, Bussière and Marsilli (2014) look at the imports of 18 OECD countries (mostly advanced economies) and conclude that weakness in global trade since 2008 is, in large part, the result of a change in the composition of demand away from trade-intensive components. Focusing on AE imports simply involves understanding how each country's domestic economy affects their demand for foreign-produced goods and services. While the weakness in AE domestic demand may have implications for global trade, so does domestic demand in emerging-market economies (EMEs). For example, if weakening AE imports had been offset by strengthening EME imports during the GTC, global trade might not have faltered so severely. As such, in a context of rapidly increasing demand from EMEs, a more pertinent question is how a country's exports are affected by changes in the global demand for its products.

[1] Intra-European trade is considered to be international trade in this paper.

The process of elaborating new foreign demand measures begins with finding a proxy for the demand for imported goods, for which we use a measure of import-intensity adjusted demand (*IAD*), inspired by Bussière et al. (2013).[2] We construct this measure for 50 countries:[3]

$$\log(IAD_t^i) = \omega_{C,t}^i \log(C_t^i) + \omega_{I,t}^i \log(I_t^i) + \omega_{G,t}^i \log(G_t^i), \quad (1)$$

where $\omega_{C,t}^i$, $\omega_{I,t}^i$ and $\omega_{G,t}^i$ are weights to aggregate country i's private consumption, total investment and government consumption, respectively.[4] The weights are based on the import content of final demand expenditures obtained from the OECD input-output database and are normalized to sum to one.[5] We purposely exclude exports from equation (1), despite their often-elevated import content, in order to focus on the role of domestic demand as the final driver of exports.[6]

Table 1 shows the import content of domestic demand components in 2005 for the 18 advanced economies considered in this paper, as well as for the largest EMEs. The data are taken from Bussière et al. (2013). A few observations are noteworthy. First, investment is relatively import-intensive, while private consumption and, especially, government expenditures have lower import content. Second, relative to other advanced economies, the United States and Japan have much lower import propensities, reflecting the large availability of domestic intermediate suppliers. Third, the import content of GDP components is, on average, slightly lower in AEs than in EMEs. This result is, however, mostly because of the United States and Japan; if these two countries were excluded, average import propensities of advanced economies would be higher than or comparable with those of EMEs.

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[2] Bussière et al. (2013) show that *IAD* better captures the extent of the great trade collapse of 2008–09 relative to other standard measures of import demand, such as GDP or domestic demand. With large declines in import-intensive GDP components (mostly investment and, to a lesser extent, exports), *IAD* captures about 80 per cent (86 per cent when also taking into account inventories) of the drop in G-7 imports over the 2008Q4–2009Q1 period, relative to about 51 per cent when using GDP.

[3] The 50 countries considered in this paper are Argentina, Australia, Austria, Belgium, Brazil, Canada, Chile, China, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Japan, Korea, Luxembourg, Malaysia, Mexico, the Netherlands, New Zealand, Norway, the Philippines, Poland, Portugal, Romania, Russia, Saudi Arabia, Singapore, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, the United Kingdom, the United States, and Vietnam.

[4] As in Bussière et al. (2013), investment comprises business, residential and government investment.

[5] The import intensities of demand components are available from Bussière et al. (2013) for 1985, 1990, 1995, 2000 and 2005; the quarterly values are linearly interpolated between these dates and are fixed at their 2005 values beyond 2005.

[6] The results, including exports in *IAD*, are qualitatively similar. More of the weakness in AE exports is accounted for by foreign demand, but the weak recovery in business investment and in Europe is still considered an important explanatory demand factor.

Table 1: Import content of main domestic demand components (2005)*

	Consumption	Government consumption	Investment**
Australia	0.18	0.10	0.26
Belgium	0.34	0.12	0.50
Canada	0.26	0.10	0.35
Denmark	0.32	0.10	0.39
Finland	0.27	0.12	0.32
France	0.23	0.09	0.25
Germany	0.23	0.09	0.31
Italy	0.21	0.07	0.27
Japan	0.12	0.06	0.15
Korea	0.24	0.11	0.29
Netherlands	0.30	0.11	0.39
New Zealand	0.21	0.10	0.39
Norway	0.32	0.11	0.36
Portugal	0.29	0.10	0.36
Spain	0.24	0.11	0.28
Sweden	0.28	0.11	0.43
United Kingdom	0.27	0.13	0.25
United States	0.12	0.06	0.17
Brazil	0.10	0.04	0.21
Russia	0.23	0.12	0.26
India	0.14	0.08	0.29
China	0.19	0.14	0.29
South Africa	0.21	0.09	0.35
Advanced economies (ex. US/Japan)***	0.18 (0.25)	0.08 (0.10)	0.24 (0.32)
Emerging-market economies***	0.20	0.11	0.33
World***	0.19	0.09	0.27
G-7 countries***	0.16	0.07	0.21
Euro area***	0.25	0.10	0.31

Source: Bussière et al. (2013)

*For instance, 0.30 in the consumption column implies that 30 per cent of households' spending in this country was imported (directly or indirectly) in 2005.

**Investment is gross fixed capital formation and comprises business, residential and government investment.

***Aggregate-area numbers are calculated as a weighted average of available countries (purchasing-power-parity GDP weights).

We elaborate new country-specific measures of foreign demand (FD_t^i) for exports using *IAD*, as follows:

$$\log(FD_t^i) = \sum_{j=1}^{50} \lambda_t^{i,j} \log(IAD_t^j), \quad (2)$$

where $\lambda_t^{i,j}$ is the per cent share of total exports of country i going to country j at time t. These export shares are allowed to vary quarterly, are calculated using bilateral nominal trade data from the International Monetary Fund Direction of Trade Statistics and are reweighted to sum to one. IAD_t^j represents the import-intensity adjusted measure of demand in country j, as defined in equation (1).

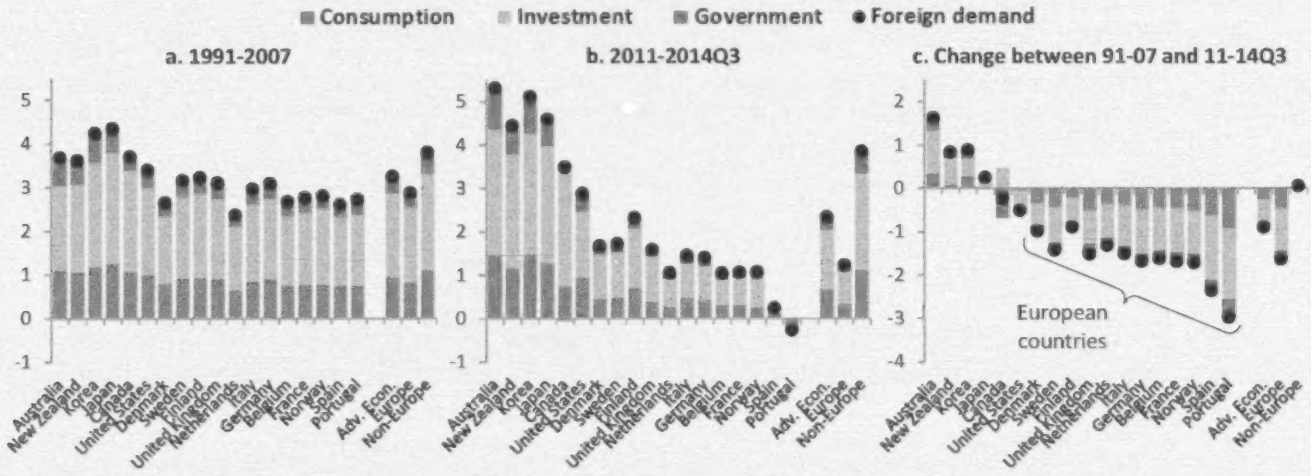
The foreign demand measure in equation (2) is therefore a weighted average of domestic demand for real imports in country *i*'s trading partners.[7]

We construct this measure of foreign demand of exports for 18 OECD countries (accounting for about 80 per cent of total exports from advanced economies) using *IAD* from 50 countries (those in Bussière et al., 2013). These 50 countries generally account for about 90 per cent of the 18 OECD countries' exports and 90 per cent of global GDP.

Chart 2 shows the decomposition of foreign demand growth into its three domestic demand components for each of the 18 countries over two subsamples: the period before the GTC (1991–2007) (**Chart 2a**) and the period since 2011 (2011Q1–14Q3) (**Chart 2b**). In **Chart 2c**, which shows the change between the two subsamples, there is a clear differentiation between European countries and other advanced economies.

Chart 2: A slowdown in foreign demand for exports is observed mainly among European countries

Contributions in percentage points to average annualized growth in foreign demand



The first interesting observation is that, in all countries, the variation in investment is a key driver of the change in foreign demand growth between the two subsamples. Also, before the crisis, foreign demand for AE exports was growing, on average, between 2.5 and 4.5 per cent for most of the 18 countries; since 2011, foreign demand growth has been a lot more heterogeneous.

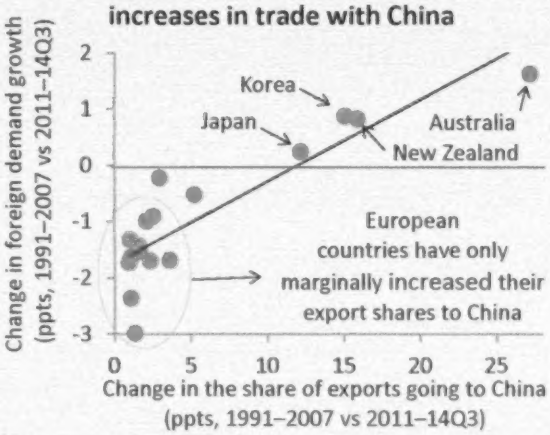
European countries have experienced a noticeable slowdown in the growth rate of foreign demand for their exports in the past three years relative to the pre-crisis period, mainly because of weaker investment. Note that, in this calculation, other European countries are considered to be foreign countries. Conversely, in some non-European economies (Australia, New Zealand, Korea and Japan), the growth rate of foreign demand for their exports has picked up over the past three years. These countries have had a noticeable increase in their exports to China (as a share of total exports), as shown in

[7] *FD* assumes that country *j* imports all final demand components in the same proportion from all countries. It may not be a perfect measure of foreign demand if, for example, country *j* imports a large amount of consumption goods, but none from country *i*.

Chart 3. European countries have not materially increased their trade with China in recent years, limiting growth in their foreign demand compared with non-European countries.

Canada's foreign demand growth since 2011 has been broadly in line with the pre-crisis trend, with stronger investment growth abroad (mainly from the United States) largely offset by weaker government spending and private consumption growth (due mainly to the U.S. fiscal consolidation and household deleveraging that occurred over the 2011–13 period). Foreign demand growth for U.S. exports has been slowed down by weaker global investment.

Chart 3: Changes in the pace of foreign demand growth are strongly correlated with increases in trade with China



3. How Much of the Export Slowdown Is Due to Foreign Demand?

Similar to the import-demand equation in Bussière et al. (2013), we estimate a standard model of export demand in which real export growth is a function of country-specific foreign demand growth and relative export price growth:[8]

$$\Delta \log X_t^i = \alpha_0^i + \alpha_1 \Delta \log FD_t^i + \alpha_2 \Delta \log FD_{t-1}^i + \alpha_3 \Delta \log(PX_t^i * REER_t^i) + \alpha_4 \Delta \log(PX_{t-1}^i * REER_{t-1}^i) + e_t^i, \quad (3)$$

where *X* is real exports, *FD* is foreign demand (as described above), *PX* is the relative export price (the export deflator divided by the domestic GDP deflator) and *REER* is the real effective exchange rate. The *PX*REER* term is the price of exports relative to prices in their trading partner countries, expressed in a common currency. A negative coefficient is expected for this variable. We estimate the model in a panel framework with country fixed effects using data for the same 18 OECD countries over 1991Q1 to 2014Q3. Estimation results are presented in **Table 2**. All coefficients are of the expected sign and statistically significant.[9]

[8] This regression is estimated in first differences as panel cointegration tests (Pedroni's) and did not point to any cointegration. The lag section was achieved using the Akaike Information Criterion (AIC).

[9] The short-term elasticity of a foreign demand shock is higher than one, reflecting the increase in the openness to trade since the early-1990s. In particular, the increased importance of trade processing (importing for the purpose of re-exporting once value has been added) may not be fully accounted for in this paper, since exports were left out of the calculation of *IAD*.

Table 2: Export model coefficients from equation (3)

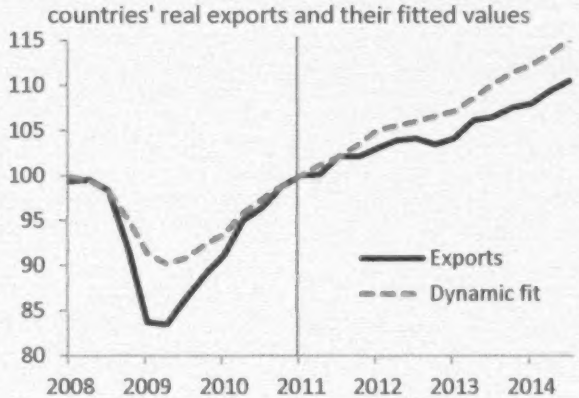
Estimation period: 1991Q1–2014Q3, country-specific constants are not reported here

Dependent variable: Real export growth (t)	Coefficients	t-statistics
Foreign demand growth (t)	1.57	5.51
Foreign demand growth ($t-1$)	0.28	1.45
Relative export price growth (t)	-0.18	-4.68
Relative export price growth ($t-1$)	-0.11	-2.36
R^2		0.22
Number of observations		1,710

The weighted average of exports (global export weights) and their fitted values are shown in **Chart 4** (charts for individual countries are available in **Appendix 1**).[10] The extent to which the model predictions do not fit actual outcomes helps to inform us about factors not related to demand in explaining the slowdown in global trade.

Chart 4: Exports in advanced economies have underperformed fundamentals since 2011

2011Q1 = 100, export-weighted average of 18 OECD countries' real exports and their fitted values



The model captures about 60 per cent of the decline that occurred in AE exports in 2008–09, suggesting that the collapse in AE exports during the GTC was more pronounced than historical elasticities of demand and prices would suggest. This result is consistent with a number of recent studies—including Bussière et al. (2013) and De Schryder and Lewis (2014)—that find changes in global demand to be the primary driver of the GTC, but also conclude that the decline in global trade in 2008–09 was larger than suggested by the standard model of trade.[11]

Since 2011, AE exports appear to have underperformed relative to fundamentals, suggesting that factors other than foreign demand and relative prices have likely restrained them. This result holds for a majority of advanced economies (see **Appendix 1** and **Appendix 2**).

Table 3 shows the fit of the estimated model (based on the coefficients estimated over the entire sample), comparing the results for the pre-crisis period with those of the past three years.[12] It also shows the decomposition of the slowdown in average AE export growth between changes in foreign demand and relative prices.[13] Overall, while the model explains export growth relatively well over the period 1991 to 2007, it overpredicts export growth since 2011. Nevertheless, export fundamentals, in

[10] The black line in Chart 4 is very close to the aggregate OECD export series published by the OECD.

[11] De Schryder and Lewis (2014) are able to explain relatively well the extent of the collapse and subsequent recovery in AE exports through 2011 by augmenting the traditional model of trade with unobserved common factors. This finding is due to the fact that the collapse in global trade during the GTC affected a majority of advanced economies simultaneously.

[12] The two-period averages presented in Table 3 (first row) are different than those reported in the introduction, because exports in this table are gathered from the national accounts (they also include exports of services) and the mix of countries is different (for instance, it includes Korea—a fast-growing economy—and excludes a number of other advanced economies).

[13] The constant is fixed over the entire sample for a given country, but its contribution to export growth for the three aggregates considered changes as the relative importance (based on export weights) of countries evolves.

particular foreign demand, capture about 55 per cent of the decline in export growth that occurred in the past three years relative to the pre-crisis period (-1.5 of the -2.7 percentage points). This finding is consistent with those of Boz, Bussière and Marsilli (2014), who conclude that changes in the composition of demand also explain roughly 55 per cent of the slowdown in advanced-economy imports between the first quarter of 2012 and the second quarter of 2014 relative to the historical trend (1985–2014). The aggregate results, however, mask a sharp difference between European and non-European countries.

Table 3: Decomposing the slowdown in export growth relative to pre-recession trends

Export-weighted average of countries' exports/contributions to growth*

Advanced economies	1991–2007	2011–2014Q3	Change
Average annualized change in (%):			
- Real exports	5.8	3.1	-2.7
- Fitted values	5.6	4.1	-1.5
- Unexplained	0.2	-1.0	-1.2
Average estimated contribution from (p.p.):			
- Constant	-0.9	-0.6	0.3
- Foreign demand	6.1	4.4	-1.6
- Relative prices	0.4	0.3	-0.2
European countries	1991–2007	2011–2014Q3	Change
Average annualized change in (%):			
- Real exports	5.8	2.8	-3.0
- Fitted values	5.7	2.5	-3.2
- Unexplained	0.0	0.2	0.2
Average estimated contribution from (p.p.):			
- Constant	-0.2	0.0	0.2
- Foreign demand	5.5	2.4	-3.1
- Relative prices	0.4	0.1	-0.3
Non-European countries	1991–2007	2011–2014Q3	Change
Average annualized change in (%):			
- Real exports	6.0	3.6	-2.4
- Fitted values	5.4	6.2	0.8
- Unexplained	0.6	-2.6	-3.2
Average estimated contribution from (p.p.):			
- Constant	-2.2	-1.2	0.9
- Foreign demand	7.2	7.0	-0.1
- Relative prices	0.4	0.4	0.0

*Numbers may not add because of rounding.

For European countries, the slowdown in export growth is relatively well explained by the model (-3.0 versus -3.2 per cent). Looking at the individual-country results (**Appendix 2**), however, the slowdown in export growth has been much smaller than suggested by foreign demand for a number of peripheral countries (especially Spain and Portugal). This is most likely due to the competiveness gains achieved in these countries through post-crisis structural adjustments and disinflation (**Chart 5**).[14]

[14] The relative price measure included in equation (3) is defined in terms of export prices and may not capture the full extent of the post-crisis structural adjustments that reduced unit labour costs.

For countries outside of Europe, the slowdown in export growth (-2.4 per cent) is inconsistent with the evolution of the model's prediction, which would have suggested faster export growth (+0.8 per cent). This result is highly influenced by Japan and Korea and, to a lesser extent, by Australia and New Zealand (see **Appendix 2**). These countries have been increasingly exposed to China and other EMEs, whose domestic demand has grown significantly in recent years. Their exports, however, have not kept up with the pace of foreign demand implied by this change. For Japan and Korea, specifically, this is reflected in the considerable loss of export market share in China (**Chart 6**), since China has increasingly been producing some of the high-value-added intermediate components domestically rather than importing them.[15] Production offshoring and declines in sectoral competitiveness may also explain some of the losses (**Chart 7**).[16]

Chart 5: Competitiveness in Spain and Portugal has improved in recent years

Average growth in nominal unit labour costs

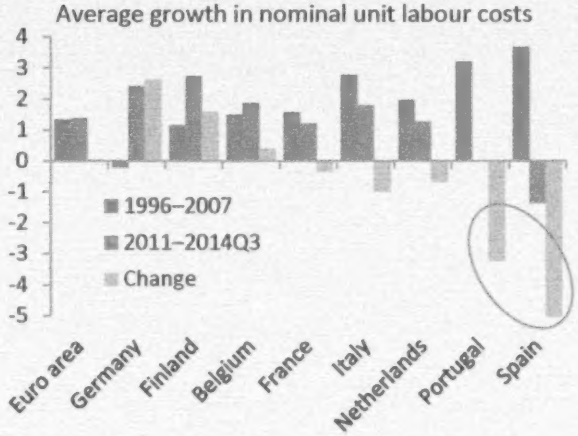
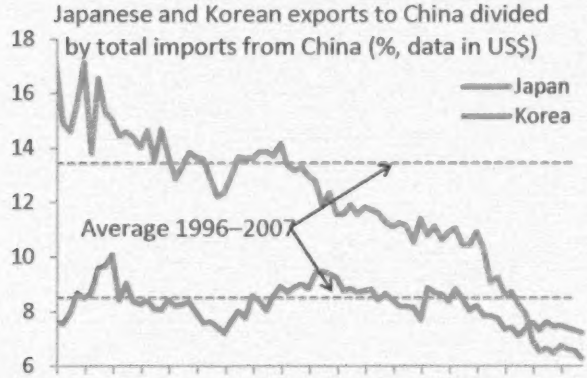


Chart 6: Japan and Korea lost considerable market share in China

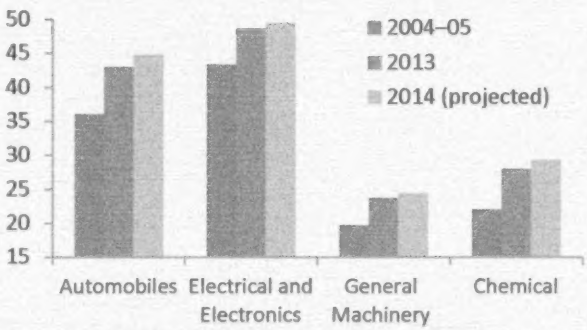
Japanese and Korean exports to China divided by total imports from China (%, data in US$)



Source: IMF Direction of Trade Statistics Last observation: 2014Q3

Chart 7: Production offshoring is increasingly present in Japanese manufacturing

Ratio of overseas production by major sector (%)



Source: 2014FY Survey Report on Overseas Business Operations of Japanese Manufacturing Companies, Japan Bank for International Cooperation

For Canada, the slowdown in export growth since 2011 relative to the pre-crisis period is only partly explained by the model. Canadian exports lagged fundamentals in 2012 and 2013 (see **Appendix 1**), although they have evolved largely in line with them in 2014. Results for the United States are similar, although the model captures somewhat more of the slowdown in U.S. export growth.

To assess to what extent the slowdown in AE exports is due to the weak recovery in global business investment, we use equation (3) to run a counterfactual exercise in which we impose that investment in

[15] A decline in the share of intermediate goods in total Chinese imports has been observed in recent years.

[16] In its April 2014 semi-annual Outlook for Economic Activity and Prices, the Bank of Japan indicated that firms have shifted their production offshore "at an accelerated pace."

all 50 countries' *IAD* grew as quickly since 2011 as in the pre-crisis period. In such a scenario, AE's predicted export growth would have been 1.4 percentage points higher over the past three years (amounting to about half of the actual slowdown in exports). In a different exercise, in which investment growth would have been stronger since 2011 only among European countries (26 of the 50 countries), the predicted export growth of AEs would be 0.9 percentage points higher. European countries, therefore, account for 64 per cent of the overall sluggishness in exports that originates from weak global investment.

To assess the importance of the weakness in European demand for AE export growth, we run another counterfactual exercise in which we impose that the *IAD* of the 26 European countries grew between 2011 and 2014Q3 as quickly as their pre-crisis trend. Under this scenario, the predicted export growth of AEs would have been 1.5 percentage points higher over the past three years (+2.3 percentage points in Europe and +0.5 percentage points outside of Europe). The impact in this counterfactual is close to 50 per cent of the actual slowdown in AE export growth, highlighting the importance of the post-crisis stagnation in Europe for explaining the dynamics of AE exports.

Finally, to better understand how much of the slowdown in the global demand for advanced-economy exports is due specifically to a shift in the composition of global demand (away from the trade-intensive investment), we redefine the measure of foreign demand in equation (2) by multiplying and dividing *IAD* by foreign domestic demand (*DD*). After reorganizing, we obtain a country-specific measure of foreign demand that is composed of two parts:

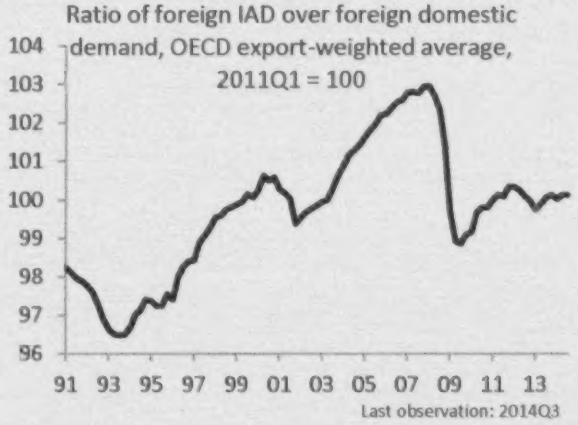
$$\log(FD_t^i) = \sum_{j=1}^{50} \lambda_t^{i,j} \log\left(\frac{IAD_t^j}{DD_t^j} DD_t^j\right) = \sum_{j=1}^{50} \lambda_t^{i,j} \log\left(\frac{IAD_t^j}{DD_t^j}\right) + \sum_{j=1}^{50} \lambda_t^{i,j} \log(DD_t^j) \qquad (4)$$

The first part, the ratio of foreign *IAD* to foreign domestic demand, can be viewed as a measure of how favourable to trade the composition of foreign domestic demand is. For a given level of domestic demand, a shift in its composition away from import-intensive investment and toward consumption or government spending would decrease *IAD* and consequently foreign demand. The second part of equation (4) is simply a country-specific measure of foreign domestic demand.

Chart 8 shows the evolution of the average across all 18 countries of the ratio of *IAD* over domestic demand. From the mid-1990s to 2007, the composition of global demand became increasingly favourable to trade, with investment growing more quickly than GDP. The crisis induced a large unfavourable shift in the composition of global demand. Since 2011, however, the composition of demand has been roughly stable, in contrast to the pre-crisis period.

Such transformation of the foreign demand

Chart 8: Global demand became increasingly favourable to trade in the pre-crisis period



variable allows for an allocation of the -1.6-percentage-point contribution of foreign demand to the slowdown in AE export growth in **Table 3** between broad-based weak foreign domestic demand and deterioration in the trade-composition of global demand. The result of this allocation is that about 80 per cent (or -1.3 percentage points) of the contribution of global demand to the slowdown is due to the broad-based nature of the weakening in global demand, while only 20 per cent reflects its less-favourable composition. The weakening of the trade composition of global demand has been larger for European countries' exports.

4. Conclusion

We find that lacklustre global demand, in particular weak investment and subdued post-crisis demand in Europe, explain over half of the sluggishness in AE exports since 2011. However, export growth remains weaker than predicted by demand and relative prices in many countries, suggesting there were other restraining factors.

Our findings, however, do not inform us on whether the slowdown in global trade is cyclical or structural. One has to infer what proportion of the post-crisis weakness in both global investment and the European domestic economy is due to cyclical or structural factors. Finding such an answer is beyond the scope of this paper and remains a very difficult question for economists to answer. If the slowdown in the global demand for trade is mostly cyclical, the increase in global investment growth (with its high import content) and improvement in European domestic demand (as the impact of crisis-related restraining factors abate) should push export growth toward growth rates observed before the GTC. If, however, the slowdown in global demand proves to be largely structural, it is possible that AE exports will remain sluggish. The future outcome probably lies between these two scenarios, and only time will tell which explanation holds up best.

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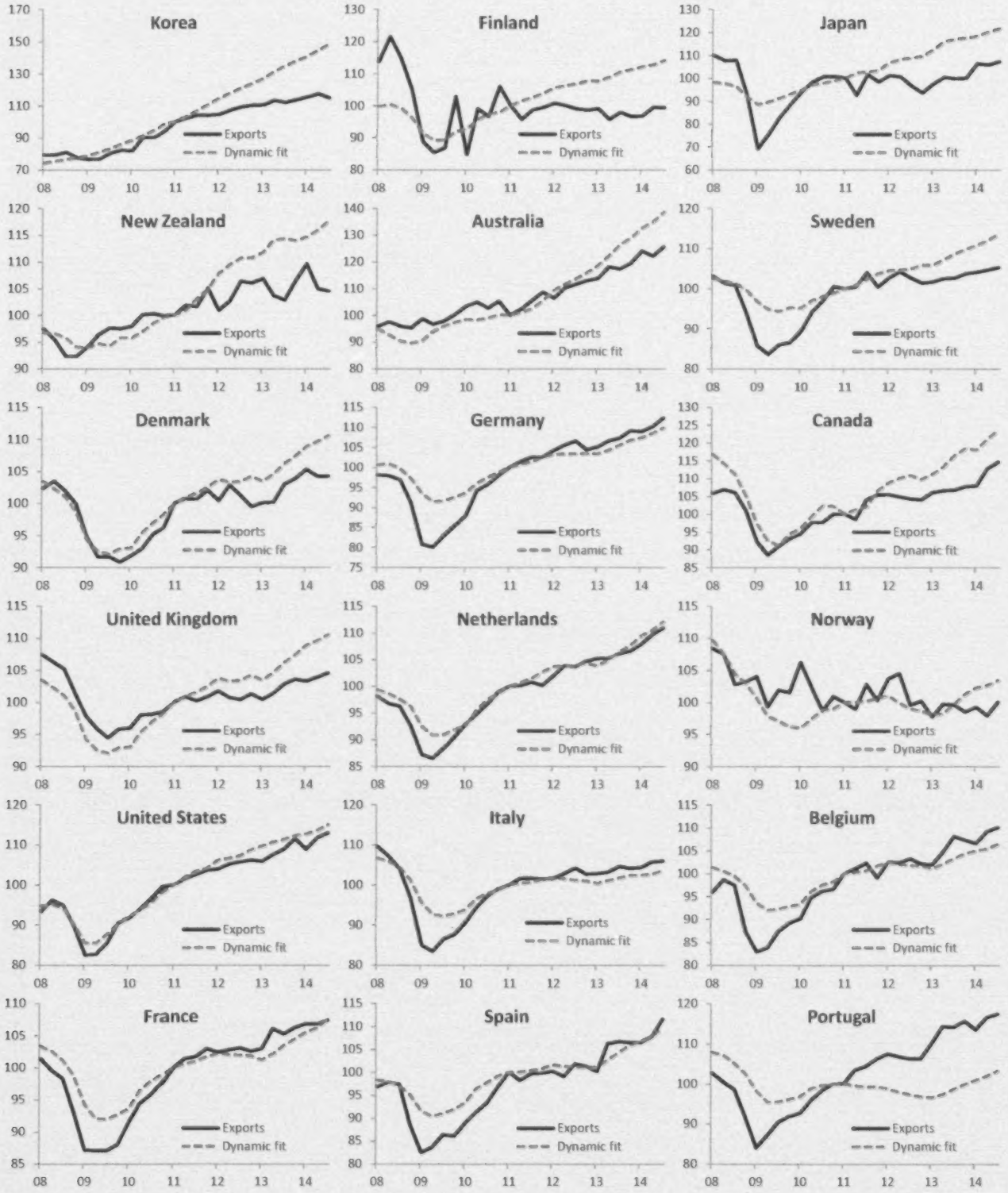
Appendix 1. Real Exports and Their Panel-Estimated Fitted Values (2011Q1 = 100)



Appendix 2. Decomposing the Slowdown in Export Growth Relative to Pre-crisis Trends, by Country

Average annualized growth (per cent)*

Korea	1991–2007	2011–2014Q3	Change
Real exports	14.2	5.8	-8.3
Fitted values	11.4	11.6	0.3
Unexplained	2.8	-5.8	**-8.6**
Japan	1991–2007	2011–2014Q3	Change
Real exports	6.1	3.1	-3.0
Fitted values	4.6	5.7	1.2
Unexplained	1.5	-2.7	**-4.2**
Australia	1991–2007	2011–2014Q3	Change
Real exports	5.7	5.3	-0.4
Fitted values	4.9	9.1	4.2
Unexplained	0.9	-3.8	**-4.7**
Denmark	1991–2007	2011–2014Q3	Change
Real exports	5.7	2.4	-3.3
Fitted values	5.0	3.2	-1.8
Unexplained	0.7	-0.8	**-1.6**
Canada	1991–2007	2011–2014Q3	Change
Real exports	5.7	4.0	-1.7
Fitted values	5.8	5.4	-0.4
Unexplained	-0.1	-1.4	**-1.3**
Netherlands	1991–2007	2011–2014Q3	Change
Real exports	6.5	3.1	-3.3
Fitted values	6.5	3.5	-3.0
Unexplained	0.0	-0.3	**-0.3**
United States	1991–2007	2011–2014Q3	Change
Real exports	6.3	3.6	-2.7
Fitted values	6.0	4.3	-1.7
Unexplained	0.3	-0.8	**-1.1**
Belgium	1991–2007	2011–2014Q3	Change
Real exports	5.0	3.8	-1.1
Fitted values	5.6	2.2	-3.4
Unexplained	-0.6	1.6	**2.2**
Spain	1991–2007	2011–2014Q3	Change
Real exports	7.7	4.2	-3.5
Fitted values	7.7	2.8	-4.9
Unexplained	0.0	1.5	**1.5**

Finland	1991–2007	2011–2014Q3	Change
Real exports	10.0	-1.2	-11.3
Fitted values	6.6	4.2	-2.4
Unexplained	3.5	-5.4	**-8.8**
New Zealand	1991–2007	2011–2014Q3	Change
Real exports	5.1	1.7	-3.4
Fitted values	4.0	4.6	0.5
Unexplained	1.1	-2.9	**-3.9**
Sweden	1991–2007	2011–2014Q3	Change
Real exports	7.4	1.5	-5.9
Fitted values	6.7	3.8	-2.9
Unexplained	0.6	-2.3	**-3.0**
Germany	1991–2007	2011–2014Q3	Change
Real exports	6.5	3.8	-2.8
Fitted values	6.1	2.9	-3.2
Unexplained	0.5	0.9	**0.4**
United Kingdom	1991–2007	2011–2014Q3	Change
Real exports	6.5	1.0	-5.5
Fitted values	5.8	1.7	-4.1
Unexplained	0.7	-0.6	**-1.3**
Norway	1991–2007	2011–2014Q3	Change
Real exports	3.9	0.2	-3.8
Fitted values	3.4	1.2	-2.2
Unexplained	0.5	-1.1	**-1.6**
Italy	1991–2007	2011–2014Q3	Change
Real exports	5.0	1.9	-3.2
Fitted values	4.5	1.3	-3.2
Unexplained	0.5	0.6	**0.1**
France	1991–2007	2011–2014Q3	Change
Real exports	5.5	2.7	-2.8
Fitted values	5.6	2.3	-3.3
Unexplained	-0.1	0.4	**0.5**
Portugal	1991–2007	2011–2014Q3	Change
Real exports	5.5	4.6	-0.9
Fitted values	6.5	0.9	-5.6
Unexplained	-1.1	3.7	**4.7**

*Numbers may not add because of rounding.